

Remarks/Arguments

Claims 1-22 were presented for examination. By the aforementioned Office Action, Claims 1-22 were rejected under 35 U.S.C. 103(a).

By this Amendment, Claims 1, 7, 10, 12 and 20 have been amended. Claims 5, 6 and 9 have been cancelled. New Claim 23 has been added. No new matter has been added. Claims 1-4, 7, 8, 10-23 are currently pending, and reconsideration of the Office Action is respectfully requested for the reasons set forth below.

Claim Rejections under 35 U.S.C. 103(a)

Claims 1-5, and 7-22 were rejected under 35 U.S.C. 103(a) as being unpatentable over Thorne (US 5,670,955) in view of Date (US 5,498,843).

Amended Claim 1 recites a joy-dial having a first and second x-axis input, a first and second y-axis input, a first and second directional input, a joy pad, an elastically deformable diaphragm under the joy pad corresponding to each of the x-axis and y-axis inputs, and a contact below each diaphragm. The first directional input is operated by rotating the joy pad in a clockwise direction about a z-axis. The second directional input is operated by rotating the joy pad in an anti-clockwise direction about the z-axis.

Thorne teaches a thumb-pad input device that enables a user to generate direction and speed of a cursor on a screen. Many contacts are arranged in a circumferential manner below the thumb-pad. Each contact is paired with a corresponding switch. When the user presses the thumb-pad, he closes one or more switches. The number of closed switches corresponds to the magnitude of the force applied to the thumb-pad, and hence, the speed of the cursor on the screen. The middle closed switch of the left-most (most counter-clockwise) closed switch and the right-most (most clockwise) closed switch corresponds to the direction of the cursor.

Date teaches a control key device. The device includes a casing, a key member, a contact member, a resilient member and a substrate. The casing

has a dome-shaped portion having a top curved surface and a through-hole at the centre. The resilient member is provided on the substrate. The substrate has electrical contacts, and the resilient member have bulges at positions corresponding with the contacts on the substrate. The resilient member also has a contact at the underside surface of each bulge, so that it electrically connects with the contact of the substrate when deformed. The key member is connected to the contact member via the through-hole of the casing. The key member has a sliding surface facing the top curved surface of the domed-shaped portion, so that it can slide along the top curved surface when tilted. The contact pressing member has legs at positions corresponding to the bulges of the resilient member for deforming the bulges.

The applicant submits that Thorne did not teach that the joy pad (thumb-pad) is rotated in the clockwise or anti-clockwise direction about the z-axis to operate the first and second directional inputs as recited in Claim 1. On the contrary, Thorne teaches that the user presses down on the pad for closing the contacts (see col 2 line 26, col 4, lines 2-5). Furthermore, the pad of Thorne is secured to a board member by an annular member (see col 4, lines 57-61 and Fig. 4). Therefore, it can be seen that the pad is prevented by the annular member from rotating in the clockwise and anti-clockwise direction about the z-axis.

In the Office Action of December 14, 2004, the Examiner stated that Fig. 6 of Thorne which teaches that switch 0 represents the most counter-clockwise switch and switch 4 represents the most clockwise switch in an arc of closed switches 0 through 4 correspond to the clockwise and anti-clockwise rotation of the joy pad about the z-axis as recited in Claim 1. The applicant respectfully disagrees. The switch 0 and 4 only represent the endpoints of the closed switches (see col 6, lines 26). This only mean that the thumb-pad is pressed in such a way that the switches 0-4 are closed. The thumb-pad is not rotated in the clockwise or anti-clockwise direction about the z-axis as recited in Claim 1.

Similarly, the applicant submits that Date did not teach that the joy pad is rotated in the clockwise or anti-clockwise direction about the z-axis to operate the first and second directional inputs as recited in Claim 1. On the contrary, Date teaches that an operator pushes the key member to operate the control key device (see col 2, line 66 – col 3, line 15, col 7, lines 9-20).

Accordingly, the applicant submits that the subject matters of Claim 1, and Claims 2-4, 7, 8, 10-19 dependent thereof, are patentable over Thorne in view of Date.

For the same reason, the applicant submits that the subject matters of Claim 20, and Claims 21, 22 dependent thereof, are patentable over Thorne in view of Date.

New Claim 23

Claim 23 includes the features of Claim 1, and further recites a central input. When pressure is applied on the central input, all the diaphragms located below the x-axis and y-axis inputs are deformed, and all the associated contacts are closed.

The applicant submits that Thorne, Date and Palisek, whether taken alone or in combination, did not disclose that all the contact switches are closed when pressure is applied to the central input as recited in Claim 23.

Thorne did not disclose a central input. Instead, thumb-pad of Thorne is supported on a pivot member. As a result, the thumb-pad is pivoted about the central region. Furthermore, the thumb-pad of Thorne is designed to avoid closure of more than 8 switches at any one time (col 5, lines 26-30). In other words, the thumb-pad of Thorne does not close all the switches at one time as recited in Claim 23.

Date did not disclose that all the contacts of the control key device as shown in Fig. 1 are closed when the central input of device is pressed. To operate the device shown in Fig. 1, an user not only need to press the central input

downwards, but also to tilt the key member or the pad in order to close one pair of contacts (col 2, lines 4-26). The various embodiments of the key control device disclosed in Date do not have any central input. On the contrary, these embodiments are structured in such a way that the key member is operated by tilting it to close a pair of desired contacts (col 3, lines 1-16, col 7, lines 1-5, col 8, lines 1-4).

Palisek (US 4,256,931) teaches a switching control button structure for selectively actuating resilient dome momentary contact switches. The contact switches are mounted on a support surface and arranged in a circumferential manner. The switching control button structure includes a pivot pin which supports a key member in a central position. The key member has wings extending over the contact switches. The contact switches are closed by pressing and tilting the key member in the direction of the selected contact switches.

Palisek did not disclose that all the contact switches are closed when pressure is applied on the central region of the key member as recited in Claim 23. On the contrary, the key member is pivotally mounted on a pivot at the centre. When a downward force is applied on the key member, the force has to be applied slightly off centre in the direction of one of the key wings to close the selected switch (col 3, lines 40-50).

The Applicant further submits that Palisek did not teach that the joy pad is rotated in the clockwise or anti-clockwise direction about the z-axis to operate the first and second directional inputs as recited in Claim 1. On the contrary, the contact switch of Palisek is closed by applying a downward force on the wings of the key member associated with the selected contact switches (see col 3, lines 34-39). Furthermore, the key member is configured in cruciform (col 3, line 18), and a top surface of a restraining member is a generally cruciform opening for receiving the key member (col 4, 10-12, Fig. 1). Accordingly, the key member is prevented from being rotated about the z-axis by the restraining member (col 4, lines 26).

Accordingly, the applicant submits that the subject matters of Claim 23 is patentable over Thorne, Date and Palisek,

Conclusion

For the foregoing reasons, Applicant respectfully requests the Examiner to allow the pending Claims 1-4, 7, 8 and 10-23, and to issue a Notice of Allowance for the present application. ,

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Respectfully submitted,

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